

WHAT IS CLAIMED IS:

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1. A silicon-backed microdisplay comprising:  
a silicon die;  
5 a silicon-side conductive layer disposed on the silicon die;  
a silicon-side passivation layer disposed on the silicon-side  
conductive layer;  
a cover glass;  
a glass-side conductive layer disposed on the cover glass;  
10 a glass-side passivation layer of a predetermined material and  
thickness disposed on the glass-side conductive layer; and  
liquid crystal material sandwiched between the glass-side  
passivation layer and the silicon-side passivation layer;  
wherein the thickness and material of the glass-side passivation layer are  
15 predetermined to improve the work function balance between a combination of  
the glass-side conductive layer and the glass-side passivation layer and a  
combination of the silicon-side passivation layer and the silicon-side conductive  
layer,  
thereby providing a silicon-backed microdisplay with reduced visible  
20 flicker.
2. The silicon-backed microdisplay of claim 1 wherein the silicon-  
side conductive layer is formed of aluminum, the silicon-side passivation layer  
is formed of silicon dioxide and silicon nitride, and the glass-side conductive  
25 layer is formed of indium-tin-oxide.
3. The silicon-backed microdisplay of claim 2 wherein the glass-  
side passivation layer includes  $\text{SiO}_2$ .
- 30 4. The silicon-backed microdisplay of claim 2 wherein the glass-  
side passivation layer includes  $\text{Al}_2\text{O}_3$ .

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a silicon-side passivation layer formed of silicon dioxide and silicon nitride, the silicon-side passivation layer disposed on the silicon-side conductive layer;

a cover glass;

5 a glass-side conductive layer formed of indium-tin-oxide disposed on the cover glass;

a glass-side passivation layer disposed on the glass-side conductive layer; and

10 liquid crystal material sandwiched between the glass-side passivation layer and the silicon-side passivation layer;

wherein the thickness and material of the glass-side passivation layer are predetermined to improve the work function balance between a combination of the glass-side conductive layer and the glass-side passivation layer and a combination of the silicon-side passivation layer and the silicon-side conductive layer.

15 thereby providing a silicon-backed microdisplay with reduced visible flicker.

13. The silicon-backed microdisplay of claim 12 wherein the glass-side passivation layer includes  $\text{SiO}_2$ .

14. The silicon-backed microdisplay of claim 12 wherein the glass-side passivation layer includes  $\text{Al}_2\text{O}_3$ .

25 15. The silicon-backed microdisplay of claim 12 wherein the glass-side passivation layer includes BeO.

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